***** SOUND CHIP INTERFACE BOARD *****

Three conections are required to bring your AY-3-8910 Sound Chip into action. Firstly, fit the ribbon cable header plug onto the PIO. It is essential that this is done with the WHITE ARROW pointing to the top of the NASCOM P.C.B. If fitted incorrectly you may damage the CHIP!
Secondly, a 2MHZ clock signal is required. This should be taken to the PIO connector to the middle pin on the row nearest the edge of the NASCOM PCB.
Finally, the single lead from the edge of the interface board should be connected to an amplifier/speaker unit.

-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-

PROGRAMMING THE AY-3-8910 VIA THE PIO

The following BASIC program illustrates how one note can be produced on one channel of the CHIP. The USR(0) routine is virtually the same as the machine code program set out further on.

BASIC

```
10    CLS
20    DOKE 4100,3328
30    GOSUB 1000
40    INPUT A : IFA<0 OR A>255 THEN 30
50    POKE 3349,A : B= USR(0)
60    INPUT "PRESS ENTER" ; Z : GOTO 30
1000  FOR I = 3328 TO 3386 STEP 2
1010  READ J : DOKE I,J
1020  NEXT I
1030  FOR I = 3408 TO 3418 STEP 2
1040  READ J : DOKE I,J
1050  NEXT I
1060  RETURN
1070  DATA - 12482,2003, -11345,15879, -11313, -20730
1080  DATA  1747, -11345, -13052,3408,62,1235,21709
1090  DATA  15885, -11513, -13052,3408, -1986,1235
1100  DATA  21709,15885, -11512, -13052,3408,3390
1110  DATA  1235,21709,10765, -8179,233
1120  DATA  830,536,574,1491, -11345, -14075
```

MACHINE CODE PROGRAM

```
0D00  3E CF      LD A, CF HEX   Ports seven & six control
0D02  D3 07      OUT (7),A      five & four respectively.
0D04  AF         Xor A          Mode 3 selected,followed
0D05  D3 07      OUT (7), A     by zero indicating ports
0D07  3E CF      LD A, CF HEX   only to be used for output.
0D09  D3 06      OUT (6), A
0D0B  AF         X or A
0D0C  D3 06      OUT (6),A
-------------------------------------------------------------
0D0E  AF         X or A         Clear A
0D0F  D3 04      OUT (4), A     Output to port 4
0D11  CD 50 0D   CALL 0D50      Subroutine identifies data as an address (i.e.REGISTER 0)
0D14  3E EE      LD A, EE HEX   LOAD A with note frequency.
0D16  D3 04      OUT (4), A     Output to port 4.
0D18  CD 54 0D   CALL 0D54      Subroutine identifies data as 'data'.
0D1B  3E 07      LD A, 07 HEX   Enable Register 7
0D1D  D3 04      OUT (4), A     for receipt of data.
0D1F  CD 50 0D   CALL 0D50
0D22  3E F8      LD A, F8 HEX   Send data to
0D24  D3 04      OUT (4), A     register 7.
0D26  CD 54 0D   CALL 0D54
0D29  3E 08      LD A, 08 HEX   Enable Register 8
0D2B  D3 04      OUT (4), A     for receipt of data.
0D2D  CD 50 0D   CALL 0D50
0D30  3E 0D      LD A, 0D HEX   Send data to
0D32  D3 04      OUT (4), A     register 8
0D34  CD 54 0D   CALL 0D54
0D37  76         HALT.
```

SOUND CHIP INTERFACE BOARD cont.

```
0D50  3E 03     LD A, 03 HEX     03 = LATCH ADDRESS ON PORT 4.
0D52  18 02     JR + 2
0D54  3E 02     LD A, 02 HEX     02 = WRITE TO PROGRAMMABLE SOUND GENERATOR.
0D56  D3 05     OUT (5), A
0D58  AF        XOR A
0D59  D3 05     OUT (5), A
0D5B  C9        RETURN
```

(NOTE :- TO CHANGE THE NOTE, MODIFY 0D15H to any value and re-execute the program)